

STEM NOVA Start Your Engines and Shoot!

Throughout the class, there will be discussions in which everyone will be expected to ask questions pertaining to the videos. For each video, write at least two questions that will help you either better understand the video or the topic the video was discussing. There are some example questions below the video list, please do not use the example questions as your questions.

Video List:

- Transport Systems in the USA (1 hour)
 - <https://www.youtube.com/watch?v=2-s4K3cBRxk>
- World's Biggest Mega Dams and Channels (1 hour)
 - <https://www.youtube.com/watch?v=PgHqB0Dv1hE>
- World's Fastest Train - The Race for Speed (1 hour)
 - <https://www.youtube.com/watch?v=UXQugQPslmA>
- NOVA: Secrets of Lost Empires: Medieval Siege (1 hour)
 - <https://www.youtube.com/watch?v=QVO8VzngMeQ>
- The Final Launch of The Space Shuttle Program (1 hour)
 - <https://www.youtube.com/watch?v=7Yud9NHi7pQ>
- How NASA Successfully Landed on an Asteroid (1/2 of an hour)
 - <https://www.youtube.com/watch?v=CMD-JtGQZe4>
- What is it Like to be Struck by Lightning? (1/2 of an hour)
 - <https://www.youtube.com/watch?v=GqKs8ATRGgE>

Example Questions:

- Transport Systems in the USA
 - How could widespread use of passenger trains and busses affect travel time?
 - What are the downsides of different forms of travel in the USA?
- World's Biggest Mega Dams and Channels
 - How does building these large projects affect the plant and animal life?
 - Is it better to build 1 of these massive dams or many smaller dams?
- World's Fastest Train - The Race for Speed
 - In the USA, where would fast trains be useful?
 - If trains are used to transport people, how do you get from the train station to your destination?
- NOVA: Secrets of Lost Empires: Medieval Siege
 - How did the people using these siege weapons aim them?
 - How did the people using these siege engines avoid getting attacked from the castle?

STEM NOVA Designed to Crunch and Whoosh!

Throughout the class, there will be discussions in which everyone will be expected to ask questions pertaining to the videos. For each video, write at least two questions that will help you either better understand the video or the topic the video was discussing. You only need to write two questions on the entire six-part series on how the power grid works. There are some example questions below the video list, please do not use the example questions as your questions.

Video List:

- World's Most Extreme Bridges (1 hour)
 - <https://www.youtube.com/watch?v=g0WSPkdf1OE>
- Every Bridge for Every Situation, Explained by an Engineer (1/2 of an hour)
 - <https://www.youtube.com/watch?v=1bUnFjMOrPs>
- Aerodynamics Explained by a World Record Paper Airplane Designer (1/4 of an hour)
 - https://www.youtube.com/watch?v=3KqjRPV9_PY
- How Scientists Look for Planets Like Earth (1/2 of an hour)
 - <https://www.youtube.com/watch?v=eRTovFxmAh4>
- Why don't Americans use electric kettles? (1/2 of an hour)
 - <https://www.youtube.com/watch?v=yMMTVVJI4c>
- The Making of a Wind Turbine (1 hour)
 - <https://www.youtube.com/watch?v=8NXLKRW1IEU>
- How the Power Grid Works (each video is about 10 minutes, totaling to 1 hour):
 - How Does the Power Grid Work?
 - <https://www.youtube.com/watch?v=v1BMWczn7JM>
 - How Electricity Generation Really Works
 - <https://www.youtube.com/watch?v=AHFZVn38dTM>
 - How Do Substations Work?
 - <https://www.youtube.com/watch?v=7Q-aVBv7PWW>
 - How do Electric Transmission Lines Work?
 - <https://www.youtube.com/watch?v=qjY31x0m3d8>
 - How Power Blackouts Work
 - https://www.youtube.com/watch?v=R_HGnc63QKU
 - World's Largest Batteries - (Pumped Storage)
 - <https://www.youtube.com/watch?v=66YRCjkxlcg>

Example Questions:

- World's Most Extreme Bridges
 - When do you use each type of bridge?
 - What advantages does each type of bridge have over the other types?
- Every Bridge for Every Situation, Explained by an Engineer
 - How does one figure out how much weight a bridge can carry?
 - Do drawbridges have times they are not allowed to open to allow cars to drive past?
- Why don't Americans use electric kettles?
 - How does microwaving water compare, both in terms of time and power consumption?
 - Why did the host go through so many steps to compare boiling water?
- How the Power Grid Works (reminder: you only need two questions for the entire series)
 - What issues do renewable energy sources bring into the power grid system?
 - What are examples of the "peaking plants" used when the grid has need of rapid power production?